

Demography, Clinical Profile and Outcome of Covid-19 Patients in South-East Region of Bangladesh

MI HOQUE^a, AAMIN^b, NJ HAFSA^c, RAKTER^d, P SHAHA^e, U ROY^f, N HASAN^g, AM SAEM^h

Abstract:

Introduction: In Bangladesh, the first confirmed case of COVID-19 was detected on March 8 2020, about 3 months after the initial outbreak in late December 2019 in Wuhan, China. Both affected cases and deaths have increased exponentially during this global pandemic. Demographic and clinical data on COVID-19 in Bangladesh is still deficient. Our study aims to evaluate the demographic, clinical profile and outcome of COVID-19 Patients in the east-southern region of Bangladesh.

Methodology: It was a cross sectional study. All RT-PCR-positive patients who tested in the RT-PCR lab of Comilla Medical College on 10 days of each month from July to December 2020 were included in this study. Ten days in each month were selected by lottery. After getting the verbal consent, selected patients were interviewed over the telephone by the investigator team, and their information was recorded accordingly in a preformed data sheet.

Results: A total of 606 COVID-19 RT-PCR-positive patients were interviewed. The mean age was 40.39 ± 15.42 years; 62.8% were male, and 17.3% of patients had positive contact history with COVID-19 patients. Predominant presenting symptoms were fever (71.8%), cough (41.3%), breathlessness (22.8%), fatigue (18.3%), anorexia (26%) and diarrhea

(4.1%). Hypertension (13.1%), diabetes mellitus (16.1%), ischemic heart disease (IHD) (2.8%) and chronic kidney disease (CKD) (0.4%) were frequent comorbidities. 72% of the patients were mild, 16% moderate, 7% severe, and 5% critically ill. 78% took home treatment and 5% were in ICU. 97.2% recovered and 2.8% died. Older age ($p=0.001$), male sex ($p=0.007$), smoking ($p=0.001$), breathlessness ($p=0.001$) and presence of comorbidities ($p<0.05$) were significantly associated with mortality. 33.8% had post-COVID symptoms, including fatigue 26.7% and shortness of breath 13.2%.

Conclusion: Younger age groups were more affected than older age groups. Majority of the patients did not have a history of contact with COVID-19 patients. Most of the patients had mild symptoms. About one fourth were hospitalized, among them 5% got treatment in ICU. Most of the patients recovered, and 2.8% died. Death was more common in patients with multiple comorbidities. One third of recovered patients had post-COVID symptoms.

Keywords: COVID-19; Demography; Clinical features; Outcomes.

(J Bangladesh Coll Phys Surg 2023; 41: 298-304)

DOI: <https://doi.org/10.3329/jbcps.v41i4.68940>

Introduction:

In Bangladesh, the first confirmed case of COVID-19 was detected on 8th March 2020¹. As of February 14 2022, World Health Organization has confirmed a total of over 412 million cases of coronavirus disease- 19 (COVID-19) in the world, caused by Severe Acute

Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) infection, including nearly 5.82 million deaths from this disease worldwide². SARS-CoV-2 was first discovered in Wuhan, China, in December 2019³, originally named the 2019 novel corona virus (2019-nCoV). It is rapidly spread to all continents in the world, generating a global

- a. Prof. Dr. Mohammad Izazul Hoque, Professor and Head Department of Hepatology, Comilla Medical College
- b. Dr. Al Amin, Lecturer, Department of Pharmacology and Therapeutics, Comilla Medical College
- c. Dr. Najnin Jahan Hafsa, Assistant Professor and Head Department of Pharmacology and Therapeutics, Comilla Medical College
- d. Dr. Roksana Akter, Associate Professor and Head Department of Microbiology, Comilla Medical College
- e. Dr. Pinki Shaha, Assistant Professor, Department of Microbiology, Comilla Medical College
- f. Dr. Utshab Roy, HMO, Department of Medicine, Comilla Medical College Hospital
- g. Md. Nazmul Hasan, Lab Consultant, RT-PCR lab, Comilla Medical College
- h. Dr. Abu Mohammad Saem, Consultant, Department of Pathology, Comilla Medical College Hospital

Address of Correspondence: Professor Dr. Mohammad Izazul Hoque, Professor and Head Department of Hepatology, Comilla Medical College, E-mail: izazul_hoque@yahoo.com, Mobile: 01711308005.

Received: 07 December, 2022

Accepted: 23 July, 2023

health crisis. The COVID-19 outbreak was announced as “a pandemic” on March 12, 2020, by the Director-General of WHO⁴. Bronchoalveolar lavage samples of the infected patients revealed a novel beta-coronavirus (SARS-CoV-2) and was identified as the causative agent⁵. Severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) are zoonotic in origin and attributed to fatal illness⁶. The incubation period for COVID-19 is usually within 14 days following exposure, with most cases occurring approximately four to five days after exposure^{7,8}. The clinical spectrum of COVID-19 infection is reported to be wide. Variable ranging from asymptomatic infection, mild upper respiratory tract illness like mild fever, sore throat, cough, myalgia, headache, dyspnea, diarrhoea, vomiting⁹, and severe viral infection like atypical pneumonia, acute respiratory distress syndrome (ARDS), cardiac symptoms like hypotension, myocarditis, arrhythmia, renal involvement inform acute kidney injury (AKI) and multiple organ dysfunction syndrome (MODS)¹⁰.

In a study, among total participants (n=100), the mean age was 41.7±16.3 years. Predominant presenting symptoms were fever (69%), cough (54%), breathlessness (41%), fatigue (40%), anorexia (26%) and diarrhea (19%). Hypertension (21%), diabetes mellitus (16%), heart diseases including ischemic heart disease (IHD) (8%) and renal diseases including chronic kidney disease (CKD) (8%) were frequent comorbidities. Ten out of a hundred patients died. Older age (p= 0.001), male sex (p= 0.007), smoking (p= 0.001), breathlessness (p=0.001) and presence of comorbidities (p= <0.05) were significantly associated with mortality¹¹. Every pandemic is different. There is wide variability in clinical presentation, severity of disease, prognosis and outcome. It varies country to country, state to state and city to city. A lot of factors was postulated for this variability which may include age, viral strain, innate immunity, environmental factors and comorbidities among the affected population. So more data will be needed to understand the demographic variation, clinical characteristics and outcome of this new pandemic. Hence this study is planned over laboratory confirmed Covid-19 patients who were tested for RT-PCR in PCR lab of a tertiary care hospital of East southern region Bangladesh with aim and objective to study

various epidemiological factors, clinical presentation and outcome.

Methodology:

This cross sectional study conducted in Comilla Medical College, Cumilla. The name and mobile number of the RT-PCR positive COVID-19 patients were collected from the data registry of Comilla Medical College RT-PCR lab from July 1, 2020, to December 31, 2020. This center included the patients from the east-southern region of Bangladesh (Cumilla, Noakhali, Feni, Lukhimpur, Chandpur and Brahmanbaria districts). All RT-PCR-positive patients of ten days of each month from July to December 2020 were included in this study. Ten days in each month were selected by lottery. Patients below the age of 18 years, who did not give verbal consent to be included in this study and who could not reach over telephone were excluded from this study. Selected patients were interviewed over the telephone, and their information was recorded accordingly in a preformed data sheet. In case of death of patients, we collected the information from their 1st degree relatives. Before the study, proper ethical approval was obtained from the institutional ethical review board of Comilla Medical College. The outcome was designed as complete recovery, post-COVID symptoms or death. All collected was recorded in the structured case record form and later accumulated and compiled. The statistical analysis is done by the Statistical Package for Social Sciences version 23.0 for Windows. Qualitative variables such as fever, cough, etc. are frequency and percentage. Quantitative variables like age, duration, etc, were expressed as mean ± standard deviation (SD) and median.

Operational definition:

A confirmed COVID-19 case is detected according to the case definition of the National Guidelines on Clinical Management of Coronavirus Disease 2019 (Covid-19), Bangladesh. Here, a person with laboratory confirmation of COVID-19 infection (by RT-PCR from nasopharyngeal swab) is included and interviewed with or without clinical signs and symptoms. We clinically classified the patients' severity according to the clinical criteria of our national guideline. Mild: Presenting symptoms are mild, and there is no sign of pneumonia on imaging. Moderate: Fever and respiratory symptoms with radiological findings of pneumonia. Respiratory distress

with < 30 breaths/min, Pulse oximetry showing saturation > 93% at ambient air. Severe: Cases meeting any of the following criteria: Respiratory distress (30 breaths/min), Finger oxygen saturation 93% at rest, Arterial partial pressure of oxygen (PaO₂)/ fraction of inspired oxygen (FiO₂) ≤ 300 mmHg (O₂mmHg=0.133kPa). Critical: Cases meeting any of the following criteria: Respiratory failure and requiring mechanical ventilation-Shock. With other organ failure that requires ICU care¹².

Results:

Among 606 RT-PCR-positive CoV-19 patients, 381(62.8 %) were male and 225 (37.2%) female, the mean age was 40.39 ± 15.42 . Most of the patients were in the 31-40 years age group. 307 (50.7%) population were from urban. Family members were affected 41.6%, and Only 105 (17.3%) of patients had a positive history of contact with COVID-19 patients. (Table I).

Table-I

Baseline characteristics of study population (N=606)

Variable	Number	Percentage
Sex		
Male	381	62.8
Female	225	37.2
Age in years (Mean - 40.39 ± 15.42)		
18-30	112	18.4
31-40	150	24.7
41-50	131	21.6
51-60	101	16.7
61-70	41	6.8
>70	15	2.6
Occupation		
Service	204	33.6
Business	81	13.3
Agriculture	10	1.6
Healthcare worker	41	6.8
Student	67	11
Housewife	152	25
Others	51	8.4
Resident		
Rural	299	49.3
Urban	307	50.7
Family member affected		
Yes	251	41.6
None	355	58.6
History of contact with COVID-19 patient		
Yes	105	17.3
No	501	82.7

The most common symptom was fever 311 (71.8%), followed by bodyache 183 (30.2%), cough 250 (41.3%), loss of appetite 275 (65.9), fatigue 250 (59.9), sore throat 180 (43.1), difficulty in breathing 150 (35.9%), muscle pain 106 (28.2%). Less common symptoms were loss of smell 91 (21.8%), diarrhea 25 (11.3%), pharyngalgia 22 (10.0%), headache 17 (7.7%) and abdominal pain 5 (1.7%) (Table II).

Table-II

COVID-19 symptoms of the study patients (n=606)

COVID-19 symptoms	Yes		No	
	Fre-quency	Percen-tage	Fre-quency	Percen-tage
Fever	311	71.1	295	28.9
Bodyache	183	30.2	423	69.8
Muscle pain	60	9.9	546	90.1
Cough	250	41.3	356	58.7
Difficulty in breathing	138	22.8	468	77.2
Loss of smell	130	21.5	476	78.5
Altered sense of taste	115	19.0	491	81.0
Fatigue	111	18.3	495	81.7
Sore throat	103	17.0	503	83.0
Diarrhoea	25	4.1	581	95.9
Vomiting	9	1.5	597	98.5
Abdominal pain	10	1.7	596	98.3
Loss of appetite	27	4.5	579	95.5
Headache	46	7.6	560	92.4
Confusion	6	1.0	600	99.0
Nasal congestion	45	7.4	561	92.6
Conjunctivitis	1	0.2	605	99.8
Chest pain	9	1.5	597	98.5
Joint pain	7	1.2	599	98.8

About one fourth of the patients had a history of comorbidity where Smoking, Diabetis mellitus and Hypertension were major.(Table III).

Clinical characteristic analysis showed that significantly increased age as well as elevated numbers of underlying comorbidities in severe patients than those in non-severe patients, indicating that the age and comorbidity may be an important risk factors for poor outcome. (Table IV).

Table-III

Distribution of COVID-19-positive cases according to Comorbid condition (N=606)

Comorbid condition	Frequency with percentage
Absent	437(72.1%)
Present	169(27.9%)
Smoking	2(0.3%)
Surgery	3(0.5%)
DM	47(7.8%)
HTN	36(5.9%)
Bronchial asthma	5(0.8%)
CHD	6(1.0%)
COPD	4(0.7%)
Pregnancy	3(0.5%)
DM+Surgery	1(0.2%)
DM+Obesity	1(0.2%)
DM+HTN	43(7.1%)
DM+CHD	1(0.2%)
HTN+CHD	1(0.2%)
Bronchial asthma+CKD	1(0.2%)
DM+HTN+CHD	4(0.7%)
DM+Br. asthma+CHD	1(0.2%)
DM+HTN+Br. asthma+CHD	1(0.2%)
DM+HTN+CHD+CVD	1(0.2%)
Others	8(1.3%)
Total	606(100%)

Majority cases were mild and 6% critically ill.(Fig 1).

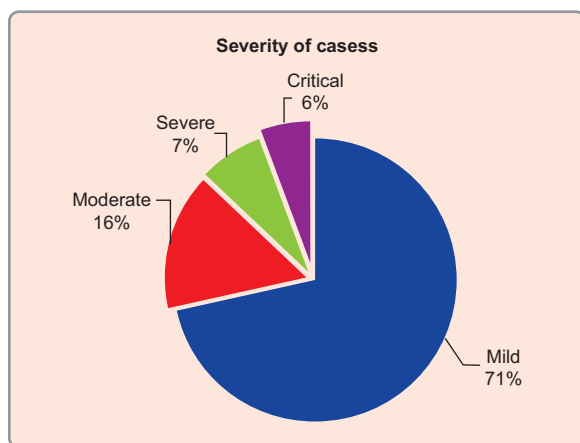


Fig-1: *Distribution of COVID-19 cases according to severity (N=606)*

Among 606 COVID-19 patients 442 were mild cases and get home treatment 96 were moderate and take treatment from home or hospital with close doctor supervision. 35 were critical and treated in COVID ICU. (Fig 1&2).

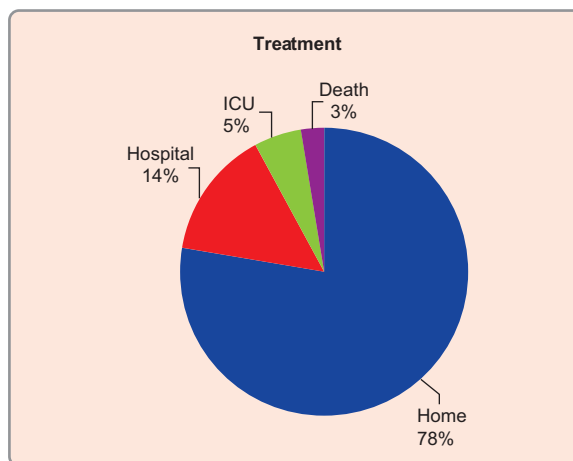


Fig. 2. *Distribution of COVID-19 cases according to treatment (N=606)*

Table-IV

The outcome of COVID-19-positive cases according to Comorbid condition (N=606)

Comorbidity	Recovered (%)	Dead (%)
Absent	431 (98.6)	6 (1.4)
Present	147(93.03)	11(6.97)
Smoking	2 (100.0)	0 (0)
Surgery	3 (100.0)	0 (0)
DM	46 (97.9)	1 (2.1)
HTN	36 (100.0)	0 (0)
Bronchial asthma	5 (100.0)	0 (0)
CHD	5 (83.3)	1 (16.7)
COPD	4 (100.0)	0 (0)
Pregnancy	3 (100.0)	0 (0)
DM +Surgery	1 (100.0)	0 (0)
DM +Obesity	1 (100.0)	0 (0)
DM+HTN	38 (88.4)	5 (11.6)
DM+CHD	1 (100.0)	0 (0)
HTN+CHD	1 (100.0)	0 (0)
Br. Asthma +CKD	0 (0)	1 (100.0)
DM +HTN +CHD	3 (75.0)	1 (25.0)
DM +Br. Asthma +CHD	1 (100.0)	0 (0)
DM +HTN +Br. Asthma+CHD	1 (100.0)	0 (0)
DM +HTN +CHD +CVD	1 (100.0)	0 (0)
Others	6 (75.0)	2 (25.0)
Total	589 (97.2)	17 (2.8)

Table-V

<i>Outcome of COVID-19 cases</i>		
Outcome	Frequency	Percent
Recovered	584	96.3
Referred to higher center	5	0.8
Death	17	2.8

Table-VI

<i>Post-COVID symptoms of the patients</i>		
Post COVID symptom	Frequency	Percent
None	401	66.2
Yes	205	33.8
Difficulty in breathing	38	13.7
Fatigue	73	26.3
Bodyache	13	4.6
Muscle pain	11	3.9
Joint pain	7	2.5
Depression	2	0.7
Headache	17	6.1
Chest pain	7	2.5
Sleep disturbance	16	5.7
Loss of smell	8	2.9
Loss of test	4	1.4
Palpitation	67	24.1
Intermittent fever	3	1.1
Rash	1	0.4
Impaired memory	3	1.1
Inability to concentrate	4	1.4
Psychosis	2	0.7

One third of the patients were suffered from Post-COVID-19 symptoms where fatigue, palpitation, difficulty in breathing and headache were common.

Discussion:

This cross sectional study included 606 SARS-CoV-2 positive cases. The mean age was 39.90 ± 15.12 years. Age group distribution showed that the younger age groups were more affected than older age groups, about half (45.3%) of the patients were aged between 31 and 50 years. This is consistent with the data from the Institute of Epidemiology, Disease Control and Research (IEDCR)¹³, Bangladesh on COVID-19. 65.3% male and 34.7% female, matched that of Asia, China (median age:

47 years; 41.9% female)¹⁴, India (mean age 40.3 years, 66.7% male)¹⁵ and other reports from Bangladesh.¹⁶

Only 105 (17.3%) of patients had a positive history of contact with COVID-19 patients. while a majority of patients without the exposure history indicate the rapid human-to-human transmission. The most common symptoms were fever 311 (71.8%), followed by body ache 183 (30.2%), cough 250 (41.3%), loss of appetite 275 (65.9), fatigue 250 (59.9), sore throat 180 (43.1), difficulty in breathing 150 (35.9%), muscle pain 106 (28.2%). Less common symptoms included loss of smell 91 (21.8%), diarrhea 25 (11.3%), pharyngalgia 22 (10.0%), headache 17 (7.7%) and abdominal pain 5 (2.3%). Similar to the findings of a systematic review by Rodriguez-Morales et al.¹⁷ Less common symptoms included loss of smell 91 (21.8%), diarrhea (25 [11.3%]) and abdominal pain (5 [2.3%]). Anosmia occurred in 7.4% of our patients. Studies from Europe first urged the international scientific community that the sudden anosmia or ageusia needs to be recognized as an important symptom of the COVID-19 infection. In 2020, another investigation over 99 patients with 2019-nCoV pneumonia, 49 (49%) had a history of exposure to the Huanan seafood market. The average age of the patients was 55.5 years (SD 13.1), including 67 men and 32 women. 2019-nCoV was detected in all patients by real-time RT-PCR. 50 (51%) patients had chronic diseases. Patients had clinical manifestations of fever (82 [83%] patients), cough (81 [82%] patients), shortness of breath (31 [31%] patients), muscle ache (11 [11%] patients), confusion (nine [9%] patients), headache (eight [8%] patients), sore throat (five [5%] patients), rhinorrhoea (four [4%] patients), chest pain (two [2%] patients), diarrhoea (two [2%] patients), and nausea and vomiting (one [1%] patient). Among them, 11 (11%) patients worsened quickly and died of multiple organ failure¹⁸.

The death rate of 17 out of 606 (2.8%) is higher with respect to the reported Case Fatality Rate of Bangladesh, which was 1.36% on June 2, 2020. Causes include old age (4 cases were > 70 years), comorbidities, and terminal cases commonly referred to this reputed tertiary care referral hospital. Older patients are an established high-risk group worldwide, and 4 out of our 5 admitted patients aged > 70 years died. Other studies reported that male gender, people older than 65 years, and smoking were risk factors for disease progression in patients with COVID-19. Clinical characteristic analysis shows a

significantly increased age and elevated numbers of underlying comorbidities in severe patients than in non-severe patients, indicating that age and comorbidity may be important risk factors for poor outcomes.

Patients with breathlessness should seek medical help immediately. Proper O₂ therapy remains the cornerstone of COVID-19 case management. Physicians should also pay particular attention to identifying treatable etiologies of dyspnea controlled along with a continuation of ongoing treatments of heart, lung, renal, liver or other comorbidities as we, as others, find that all are associated with severe disease and mortality.

Conclusion:

Younger age groups were more affected than older age groups. Most of the patients did not have a history of contact with COVID-19 patients. Common Symptoms were fever, cough, bodyache and alteration of smell. Most of the patients had mild symptoms. About one fourth were hospitalized, among them 5% got treatment in ICU. Most of the patients recovered, and 2.8% died. Death was more common in patients with multiple comorbidities. One third of recovered patients had post-COVID symptoms.

Limitation:

Our study has certain limitations. First, it is a single-centered study. For more information, multi multi-centred study should be done. Second, our study period was short; we need long-term follow-up to get the actual mortality rate. Because the true mortality of this disease cannot be estimated as some patients may die later from complications of this disease or prolonged hospitalization. Third, our study did not include the cause of death in critically ill COVID 19 patients. Fourth, in this study, we could not include the investigation, reflecting the patient's condition.

Funding:

Planning, monitoring and research division.

Directorate General of Health Services. Mohakhali, Dhaka.

Reference:

- 20-fold rise in COVID-19 cases in Bangladesh since April 1 Archived 28 July 2020 at the Way back Machine, Dhaka Tribune, April 14 2020
- World Health Organization. Coronavirus Disease (COVID-19) Situation report. February 2 2021.
- Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study - The Lancet. Accessed February 4, 2021. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30211-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30211-7/fulltext)
- WHO, 2020a. WHO announces COVID-19 outbreak a pandemic [WWW Document]. who. int. Accessed February 5, 2021. <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19-11-march-2020>
- Zhu N, Zhang D, Wang W, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. *N Engl J Med.* 2020;382(8):727-733. doi:10.1056/NEJMoa2001017
- Cui J, Li F, Shi Z-L. Origin and evolution of pathogenic coronaviruses. *Nat Rev Microbiol.* 2019;17(3):181-192. doi:10.1038/s41579-018-0118-9
- WHO. Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-2019). February 16-24, 2020. Accessed March 4, 2020. <http://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>
- Chan JF-W, Yuan S, Kok K-H, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet Lond Engl.* 2020;395(10223):514-523. doi:10.1016/S0140-6736(20)30154-9
- Stokes EK, Zambrano LD, Anderson KN, et al. Coronavirus Disease 2019 Case Surveillance - United States, January 22-May 30, 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69(24):759-765. doi:10.15585/mmwr.mm6924e2
- Arentz M, Yim E, Klaff L, et al. Characteristics and Outcomes of 21 Critically Ill Patients With COVID-19 in Washington State. *JAMA.* 2020;323(16):1612-1614. doi:10.1001/jama.2020.4326
- SGM MOWLA, KAK AZAD, A KABIR, et al. Clinical Profile of 100 Confirmed COVID-19 Patients Admitted in Dhaka Medical College Hospital, Dhaka, Bangladesh. (*J Bangladesh Coll Phys Surg* 2020; 38: 29-36) DOI: <https://doi.org/10.3329/jbcp.v38i0.47445>.
- National Guidelines on Clinical Management of Coronavirus Disease 2019 (Covid-19). Disease Control Division Directorate General of Health Services and Ministry of Health & Family Welfare, Government of the People's Republic of Bangladesh, 2020. 2020 [cited 2020 Aug 26]. / /c/Users/USER/Downloads/COVID_Guideline_V4.30.3.2020.pdf
- IEDCR. COVID-19 status of Bangladesh. <https://www.iedcr.gov.bd/index.php/component/content/article/73-ncov-2019>.
- Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med.* 2020;382(18):1708-1720

15. Gupta N, Agrawal S, Ish P, Mishra S, Gaiind R, Usha G, et al. Clinical and epidemiologic profile of the initial COVID-19 patients at a tertiary care centre in India. *Monaldi Arch Chest Dis.* 2020;90(1):193-6
16. Hossain I, Khan MH, Rahman MS, Mullick AR, Aktaruzzaman MM. The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) In Bangladesh: A Descriptive Study. *JMSCR.* 2020;08(04):544-551.
17. Rodriguez-Morales AJ, Cardona-Ospina JA, GutiérrezOcampo E, et al. Clinical, laboratory and imaging features of COVID-19: a systematic review and metaanalysis. *Travel Med Infect Dis* 2020:101623. doi: 10.1016/j.tmaid.2020.101623. PMID:32179124 PMCID:PMC7102608.
18. Nanshan Chen, Min Zhou, Xuan Dong, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *lancet.* 2020 Feb 15;395(10223):507-513. doi: 10.1016/S0140-6736(20)30211-7. Epub 2020 January 30.